



Lawton Chiles
Governor

Florida Department of Environmental Protection

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Tallahassee, Florida 32399-2400

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Virginia B. Wetherell
Secretary

September 2, 1994

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Mr. Randy Bryant
U.S. Environmental Protection Agency
Region IV (4WD-SFB)
345 Courtland St. N.E.
Atlanta, GA 30365

Re: Chevron Orlando Site - Baseline Risk Assessment

Dear Mr. Bryant:

The department's Technical Support Section and the University of Florida Center of Environmental & Human Toxicology has performed a review of the technical aspects of the documents submitted. I am forwarding those comments for USEPA's use without comment.

If you have any questions concerning these comments, please contact me.

Sincerely,



Don Harris
Environmental Manager

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Florida Department of

Memorandum

Environmental Protection

TO: Don Harris, Hazardous Waste Section
Bureau Waste of Waste Cleanup *JJE*
THROUGH: Jim Crane, Technical Review Section
Bureau of Waste Cleanup
FROM: Ligia Mora-Applegate, Technical Review Section
Bureau of Waste Cleanup
DATE: August 31, 1994
SUBJECT: *Baseline Risk Assessment for the Chevron Orlando Site
Orange County, Florida*

I have reviewed the above-mentioned document prepared by Waste Science and Technology Corp. I have also reviewed Dr. Stephen Roberts' (UF toxicologist on contract) comments. I concur with his observations and recommend that they be addressed in a letter addendum.

The affected aquifer is a G-II water quality; therefore, all Florida primary and secondary standards and minimum criteria apply. For the chemicals of concern, these levels are easily found in the pertinent rules and are also listed in the "Florida Ground Water Guidance Concentrations" booklet. If Lake Fairview could be affected by contaminated ground water seeping into it, Chapter 62-302 F.A.C., standards and criteria would also apply as action levels.

For all scenarios, when a chemical is a carcinogen acceptable soil levels or "remedial goals options" (RGOs) need to be presented based on cancer risk also not just based on non-cancer health effects. The acceptable risk level for FDEP is 1.0E-06, the RGOs presented on Table 6-6 that correspond to the 1.0E-06 would be acceptable.

If you have any questions, please see me.

Attachment
cc: John Armstrong
lm-a

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UNIVERSITY OF
FLORIDA

Center for Environmental & Human Toxicology

Bureau of Waste Cleanup

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AUG 30 1994

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August 26, 1994

Technical Report Section

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
Room 471A, Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Ms. Mora-Applegate:

I have reviewed the Draft Baseline Risk Assessment for the Chevron Orlando Site, Orlando, Florida, prepared for the Waste Management Division of USEPA Region IV by Black & Veatch Waste Science, Inc., dated June 27, 1994. Based on my review, I have the following general and specific comments:

General Comments:

This document was prepared for USEPA Region IV, and the procedures used to conduct the baseline risk assessment were, in general, consistent with their formal and informal guidance. It is clear from the risk assessment that the extent of contamination remaining on this site poses health risks for future residential or occupational land use that are unacceptable to the State. There are a number of significant errors and weaknesses throughout the document that limit its utility in making risk management decisions, however. There are problems with the selection of chemicals of potential concern, with the exposure assessment, and with the development of remedial goals options (RGOs), as outlined in the Specific Comments below. Unless these problems are fixed, this baseline risk assessment will not be terribly useful for the FDEP in managing this site.

Specific Comments:

1. One of the criteria used for screening chemicals as potential chemicals of concern is the EPA Region III Risk-Based Concentration Tables. There are several problems with this approach, as used in this document:

- a) For soil, the Region III Risk-Based Concentration values are based on ingestion only. For chemicals with significant volatility, the soil concentration corresponding to the indicated target risk (10^{-6} cancer risk or a hazard quotient of 0.1) may actually be much lower than the values presented in these tables.
- b) In some cases, the wrong Region III values were used for comparison. For example, according to the footnote in Table 2-3, Region III soil concentrations based on residential use were used as screening values for soils on site. The use of residential soil values is appropriate, since future residential use of this property is

considered feasible. The values listed in Table 2-3 are, however, Region III industrial land use screening concentrations.

- c) Average concentrations measured on site were compared with these screening values. For risk assessment purposes, the exposure point concentrations (Tables 3-1 through 3-4), which are higher, should have been used instead.
- d) Depending upon the number and concentrations of contaminants present, the use of a screening-value approach can lead to an underestimation of baseline risk. Conceptually, there are problems with using this approach to select chemicals for inclusion in a baseline risk assessment.

2. Analytical data for the site were not provided with the risk assessment. Therefore, the validity of the data summaries presented in Tables 2-1, 2-2, and 2-3 could not be verified.

3. Inhalation exposures were evaluated only qualitatively. The rationale for not considering particulate emissions is that wind speeds of approximately 22 miles per hour are required to produce wind erosion, while the average wind speed in the Orlando area is 6.8 mph. An average wind speed in the vicinity of the site of 6.8 mph does not justify ignoring inhalation of surface soil-derived particulates. The use of the EPA-recommended model for estimating particulate emissions from soil does not require that the wind speed exceed the wind erosion threshold on a continuous basis, or even that the average wind speed exceed the erosion threshold. The default particulate emission factor (PEF) value of $1.12 \text{ E}+09 \text{ m}^3/\text{kg}$ currently recommended by the USEPA for use with this model, for example, is based on an average wind speed of about 10 mph. Unless a better justification can be found, inhalation of soil-derived particulates should be included in the risk assessment.

No rationale is presented for quantitatively ignoring inhalation of contaminants volatilized from soil. Based on the VFs (volatilization factors) for the chemicals of concern in surficial soil, this is probably not a serious problem. However, the decision to ignore volatilization of chemicals from soil should be explained and defended in the document.

5. The Hazard Index values calculated for on-site soil are ≥ 1 for every exposure scenario. Actually, this represents a minimal estimate of the Hazard Index, since the potential non-cancer health effects of over 50% of the contaminants in soil were not included in the calculation (see Tables 5-1, 5-2, and 5-7 through 5-14). Similarly, potential non-cancer health effects for only about half of the chemicals of potential concern in groundwater were quantitated in developing the Hazard Index for this medium. No mention of these limitations in the estimation of non-cancer risk is made in the document.

6. Risks from groundwater exposure are high, and may have been overestimated by a factor of 1,000. It appears that concentrations of contaminants were entered into the exposure equation for groundwater (see Table 3-5) as $\mu\text{g}/\text{L}$ instead of mg/L , as the equation calls for.

7. Cancer risks for a residential scenario should be developed for a 30-year exposure beginning at age 1 year, rather than for an adult and a child resident considered separately.

8. In many cases, proposed RGOs for carcinogens are presented based on non-cancer effects only; no RGO has been calculated based on cancer risk (see Tables 6-1 through 6-8). The reason for this is unclear. For chlordane, dieldrin, aldrin, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, and α - and β -BHC, RGOs based on cancer risk must also be calculated and presented. The relevant target cancer risk level for the State of Florida is 10^{-6} .

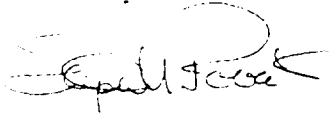
9. For groundwater, RGOs are calculated and compared with MCLs (see Tables 6-7 and 6-8). The State of Florida has primary standards or guidance concentrations for each of the contaminants present in groundwater at this site, and these should be the RGOs for this medium.

10. There are several discrepancies between contaminant data presented in Tables 2-2 and 2-3 versus Tables 3-1 through 3-4 versus Tables 7-1 and 7-2.

11. In the Environmental Assessment (Section 7.0), one of the criteria for elimination of contaminants from the risk assessment was a detection frequency less than 5%. Detection frequency should not be used to eliminate contaminants as chemicals of concern unless the concentration is low. Otherwise, important "hot spots" might be inappropriately removed from consideration. What steps were taken to insure that contaminants eliminated based on frequency of detection were at toxicologically insignificant concentrations?

Should you have any questions regarding these comments, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen M. Roberts", with a stylized flourish at the end.

Stephen M. Roberts, Ph.D.